

Appl. No. 10/810,023
Amdt. Dated Sep. 26, 2005
Reply to Office Action of June 24, 2005

Amendments to the Drawings:

The attached replacement drawing sheets include new FIGS. 2 and 4, which replace the original FIGS. 2 and 4 respectively.

New FIG 2 shows a perspective view of a shadow mask formed according to the present invention. New FIG 4 shows an enlarged view corresponding to a circled portion IV of new FIG. 2, showing a barrier array portion of a barrier array formed according to the preferred method of the present invention. The shadow mask 21 is only shown in FIGS. 2 and 3, and not in FIG. 4. However, paragraphs [0016], [0017] and [0023] have been amended to accord with the new figures. In particular, paragraph [0023] now explicitly relates to all of FIGS. 2 through 5. No new matter is entered.

Attachment: Two Replacement Drawing Sheets

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REMARKS

Applicant has checked the specification and found some English grammar mistakes and informalities in the drafting. Applicant has corrected the mistakes accordingly. These amendments do not add any new matter.

Election/Restrictions

The present application is required to be restricted to one of the following inventions under 35 U.S.C. 121:

- I. Claims 1-5, 18 and 19, drawn to a barrier array for a flat panel display, classified in class 313, subclass 292.
- II. Claims 6-17, drawn to a method for manufacturing a barrier array for a flat panel display, classified in class 445, subclass 24.

Applicant hereby affirms the election with traverse made by Mr. Joseph Chung on June 13, 2005 to prosecute the invention of group I, claims 1-5, 18 and 19. Applicant affirms that the invention of group II, claims 6-17 is withdrawn. Applicant reserves the right to prosecute the inventions of group II, claims 6-17 in one or more divisional applications. Further, applicant hereby advises that the election to prosecute the invention of group I, claims 1-5, 18 and 19 is made without traverse.

Drawing Objections

Applicant submits two new drawings named FIG. 2 and FIG. 4, which replace the original FIG. 2 and 4 respectively. New FIG. 2 shows a perspective view of a shadow mask formed according to the present

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invention. New FIG 4 shows an enlarged view corresponding to a circled portion IV of new FIG 2, showing a barrier array portion of a barrier array formed according to the preferred method of the present invention. The shadow mask 21 is only shown in FIGS. 2 and 3, and not in FIG 4. However, a corresponding description about the structure of the barrier array and method of making the barrier array is contained in amended paragraphs [0016], [0017] and [0023] of the specification. In particular, paragraph [0023] now explicitly relates to all of FIGS. 2 through 5. In light of the new FIGS. 2 and 4 and the amended paragraphs [0016], [0017] and [0023], it is submitted that the drawings show structural detail sufficient for one skilled in the art to gain a proper understanding of the disclosed invention. Further, there is no new matter entered. Applicant submits that the drawing objection is now overcome.

Claim Objections

Claim 2 is objected to because of the following informalities: Invar is a trademarked material; the composition of the desired material should be instead disclosed, such as an iron-nickel alloy. Appropriate correction is required.

In response to the objection, applicant has amended the claim 2 in accordance with the specification. That is, applicant has changed "invar" to "an iron-nickel alloy."

Claim rejections under 35 U.S.C. 102

Claims 1-5, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (U.S. 5,534,743).

As regards independent claim 1, applicant has amended this claim

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without any new matter being entered, and respectfully traverses the rejection for the following reasons:

Amended claim 1 recites:

a barrier array for use in a flat panel display, comprising: a shadow mask including a plurality of openings defined therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the shadow mask and inside surfaces of the shadow mask surrounding the openings.

Applicant submits that neither Jones '743 nor any of the other cited references, alone or in combination, discloses, teaches, or otherwise suggests the invention as currently set forth in claim 1.

Jones '743 does disclose a gate electrode for use in a field emitter structure. As illustrated in FIG. 7, the gate electrode is a metal layer 28 formed on a first etch dielectric material layer 26. A second etch dielectric material layer 30 is formed on the metal layer 28 (see column 6, lines 9-17). The metal layer 28 has a plurality of openings according to a predetermined pattern, but the openings are formed via differential etching after the first etch dielectric material layer 26, the metal layer 28 and the second etch dielectric material layer 30 having been formed in that orderly. **Therefore sides of openings of the metal layer 28 are not covered by an insulative layer.** In addition, Jones '743 does disclose a layered dielectric spacer 90 and a spacer assembly 98. As illustrated in FIG. 9, the spacer assembly 98 comprises a three-layer spacer assembly including a top spacer 100, an intermediate spacer 102 and a bottom spacer 104 (column 11, lines 14-19). **However, the layered dielectric spacer 90 and the spacer**

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assembly 98 are both selected from suitable dielectric materials. Therefore, Jones '743 does not disclose or suggest the barrier array comprising a shadow mask defining a plurality of openings therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the shadow mask and inside surfaces of the shadow mask surrounding the plurality of openings. Accordingly, Jones '743 clearly fails to teach or suggest the present invention as set forth in claim 1.

In addition, the structure of the barrier array of the present invention produces new and unexpected results. Making a shadow mask is a known technology in CRTs which has high precision, and the barrier array of the present invention is convenient to make. In addition, the thickness and the material of the insulative layer can be determined according to the insulative performance required for the field emission display. Therefore, the present invention provides a barrier array having high precision and low production costs.

Accordingly, applicant submits that amended claim 1 is not only novel over Jones '743 under s.102, but is also unobvious over Jones '743 under s.103. Accordingly, claims 2-5 which depend from claim 1 should also be patentable over Jones '743 under ss. 102 and 103. Reconsideration and withdrawal of the rejection and allowance of claims 1-5 are respectfully requested.

As regards claims 18 and 19, applicant has amended claim 18 without any new matter being entered, and has canceled claim 19. Applicant respectfully traverses the rejection of claim 18 for the following reasons:

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Amended claim 18 recites:

a barrier array for use in a flat panel display, comprising: a metal plate defining a plurality of openings therethrough according to a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the metal plate and inside surfaces of the metal plate surrounding the openings.

Jones '743 does disclose a gate electrode for use in a field emitter structure. As illustrated in FIG. 7, the gate electrode is a metal layer 28 that is formed on a first etch dielectric material layer 26. A second etch dielectric material layer 30 is formed on the metal layer 28 (see column 6, lines 9-17). The metal layer 28 has a plurality of openings according to a predetermined pattern, but the openings are formed via differential etching after the first etch dielectric material layer 26, the metal layer 28 and the second etch dielectric material layer 30 having been formed in that order. **Thus sides of opening of the metal layer 28 are not covered by an insulative layer.** Therefore, Jones '743 does not disclose or suggest: using a metal plate defining a plurality of openings therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the metal plate and inside surfaces of the metal plate surrounding the openings. Accordingly, Jones '743 clearly fails to teach or suggest the present invention as set forth in claim 18.

In addition, Jones '743 does disclose a layered dielectric spacer 90 and a spacer assembly 98. As illustrated in FIG. 9, the spacer assembly 98 comprises a three-layer spacer assembly including a top spacer 100, an intermediate spacer 102 and a bottom spacer 104 (column 11, lines 14-19).

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However, the layered dielectric spacer 90 and the spacer assembly 98 are both selected from suitable dielectric materials. Therefore, Jones '743 does not disclose or suggest: using a metal plate defining a plurality of openings therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the metal plate and inside surfaces of the metal plate surrounding the openings. Accordingly, Jones '743 clearly fails to teach or suggest the present invention as set forth in claim 18.

Furthermore, Jones '743 does disclose a field emitter structure (abstract: lines 1-4). The field emitter structure comprises: a base substrate; a field emitter element on the base substrate; a multilayer differentially etched dielectric stack circumscribingly surrounding the field emitter element on the base substrate; and a gate electrode overlying the multilayer differentially etched dielectric stack, and in circumscribing spaced relationship to the field emitter element. **The multilayer differentially etched dielectric stack is disposed under the gate electrode; thus the opening of the gate electrode is not surrounded by the multilayer differentially etched dielectric stack. Therefore, Jones '743 does not disclose or suggest: using a metal plate defining a plurality of openings therethrough according to a predetermined pattern, the predetermined pattern being in accordance with a pixel pattern of a flat panel display; and an insulative layer formed on outside surfaces of the metal plate and inside surfaces of the metal plate surrounding the openings. Accordingly, Jones '743 clearly fails to teach or suggest the present invention as set forth in claim 18.**

In addition, the structure of the barrier array of the present invention

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produces new and unexpected results. Making a shadow mask is a known technology in CRTs which has high precision, and the barrier array of the present invention is convenient to make. In addition, the thickness and the material of the insulative layer can be determined according to the insulative performance required for the field emission display. Therefore, the present invention provides a barrier array having high precision and low production costs.

Accordingly, applicant submits that amended claim 18 is not only novel over Jones '743 under s.102, but is also unobvious over Jones '743 under s.103. Reconsideration and withdrawal of the rejection and allowance of claim 18 are respectfully requested.

In view of the foregoing, the present application as claimed in the pending claims is considered to be in a condition for allowance, and an action to such effect is earnestly solicited.

Respectfully submitted,
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